

# Stroke Care in Utah Hospitals Quality and Charges, 2004-2006

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## **Introduction**

**The main purpose of this report** is to help patients compare Utah hospitals in stroke care based on in-hospital deaths and charges. If you or someone you know has had a stroke or is at risk, you may find this report helpful when considering where to receive treatment.

To learn important information about stroke care, see “Stroke Resources” later in this report.

### **Did you know?**

- Many people do not realize that they are at risk for stroke
- About six Utahns are hospitalized for stroke every day

Patient education is the key ingredient in receiving the care you want and need.

### **In-hospital deaths**

See the tables in this report for information comparing Utah’s hospitals on the following quality indicator:

- ✓ Stroke Deaths in Utah Hospitals (IQI 17)

This measure shows the percentage of in-hospital deaths among adult stroke patients. A particular hospital’s percentage of deaths depends on its patients’ medical history and how ill its patients are. You should consult your health care professional for help in understanding the best treatment options for you.

Many factors affect a hospital’s performance on quality measures. Read the online report for more information.

Read more about methods and measures used for the hospital utilization section in this report in Methods and Measures.

More information about quality indicators can be found at the Agency for Healthcare Research and Quality (AHRQ) web site (<http://www.ahrq.gov>).

### **Hospital Charges**

See the tables in this report for information on comparing Utah’s hospitals for the following indicator:

- ✓ Stroke (APR-DRG 045)

Your charges may be higher or lower than the average charges shown in the above tables. It is important to remember that “charge” is not the same as “total cost” or “total payment” to the hospital.

**Note:** Many factors will affect the cost of your hospital stay. Read more in the “About the Data” section later in this report. You can also find more information about these factors at the Utah PricePoint web site (<http://www.utpricepoint.org>).

Read more about methods and measures used for the hospital utilization section in this report in Methods and Measures.

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Please be aware that information in this report is neither intended nor implied to be a substitute for professional medical advice. Always ask questions and seek the advice of your physician or other qualified health provider prior to starting any new treatment.

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## **Key Findings**

### **How did Utah’s quality of stroke care in hospitals compare with the nation?**

For in-hospital deaths, Utah hospitals overall did about as expected compared to similar adult inpatients nationwide for deaths from stroke. Utah overall means all Utah hospitals combined.

Measures used are in square brackets. For more details, see the [Technical Document](#).

From 2004 through 2006, 673 (10.8%) of 6,228 adult stroke patients died in Utah hospitals [IQI 17]. Utah overall had about the same percentage of deaths as expected for similar patients nationwide [IQI 17].

Among the 23 Utah hospitals that treated 30 or more adult stroke inpatients from 2004 through 2006 [IQI 17]

- One hospital (4%) had fewer deaths than expected.
- 22 hospitals (96%) had about as many deaths as expected.
- No hospitals had more deaths than expected.

There are several kinds of strokes as well as several causes and risk factors. This report includes hospital tables for some of the more common kinds of stroke among adults. [Read more \(consumer link\)](#) about stroke and see the [Stroke Technical Document](#).

**Note that many factors can affect in-hospital stroke deaths at a particular hospital.** The measures in this report **include** stroke patients with do not resuscitate orders and other stroke patients near the end of their life. Read more in [About the Data](#).

## How did hospital charge differ among Utah hospitals?

Average hospital charge for the more common kinds of adult stroke inpatients [APR-DRG 045 Cerebral Vascular Accident and Precerebral Occlusion With Infarction] in this report differed widely. Among the 37 Utah hospitals that reported charge for adult stroke inpatients, average hospital charge ranged from

- \$3,660 to \$18,244 for patients with minor/moderate illness level
- \$2,386 to \$26,051 for patients with major/extreme illness level

Some less common kinds of strokes include

- Bleeding within the skull [APR-DRG 044 Intracranial Hemorrhage]. Utah hospitals treated 358 of these patients with an average charge of \$11,751 and a range of \$3,182 to \$16,433 for the minor/moderate level for severity of illness.
- Stroke without death of brain tissue [APR-DRG 046 Nonspecific Cerebral Vascular Accident and Precerebral Occlusion Without Infarction]. Utah hospitals treated 66 of these patients with an average charge of \$9,729 with a range of \$4,541 to \$16,329 for minor/moderate level for severity of illness.

Because of the relatively small numbers of these patients, this report does not include hospital tables for them.

As expected, average hospital charge for patients treated at the major/extreme level of illness tend to be higher. Often these patients require more complex treatment and longer hospital stays than patients at the minor/moderate illness level. However, patients who are very ill and die before they receive much treatment or have "do not resuscitate" orders may have low charge. For a complete list of kinds of stroke included in this report, see the [Technical Document](#).

**Note that many factors will affect hospital charge.** Read more in [About the Data](#).

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## About the Report

Please note this report is not intended to be anyone's sole source of information about hospital quality or charges in Utah. Rather, it is designed to provide helpful information that can play an important role in choosing a hospital, along with other sources including doctor recommendations.

### Why are you producing this report?

- [Senate Bill 132](#) (2005) requires the [Health Data Committee](#) (HDC) and its staff to publish reader-friendly reports comparing Utah's hospitals based on nationally-recognized measures for quality, charges and patient safety.

- The HDC and Utah Department of Health are committed to providing useful health care information for all people in Utah. Providers can use these reports to improve the quality of care they give to their patients.
- “Stroke Care in Utah Hospitals: Quality and Charges, 2004-2006” is one of a series of health care consumer reports that enable patients and families to become more actively involved in their health care. All reports can be accessed at <http://health.utah.gov/myhealthcare>.

## **Why is this report important to me?**

- Stroke is a leading cause of disability and death in the United States. About six Utahns are hospitalized with stroke every day. If you or someone you know has had a stroke or is at risk for one, you may find this report helpful when considering where to receive treatment.
- Hospitals can vary, sometimes quite a bit, in terms of quality of care and patient charges. Consumers are encouraged to use the information in this report to ask questions of their doctor or health care professional, hospital or insurance representative. Let them know you plan to take an active role in your health care decisions.

## **Who else helped shape this report?**

- Utah citizens continually review our consumer reports to make sure they are understandable and easy to read. Since 2005, several focus groups have been held in both rural and urban locations. Public input helps us create user-friendly reports for people who are not medical experts yet need useful health care information.
- SB 132 Task Force is an HDC advisory group represented by consumers, hospitals, quality organizations and public health. Task force members have advised staff about methods and measures to use in the reports.
- Hospitals reviewed their data and overall report content before public release. For more information, see the “About the Data” section in this report.
- Statistical experts assisted in selecting the appropriate method for comparing hospital performance.
- Health educators reviewed medical information in the report where applicable.

## **What are consumers saying about these reports?**

Feedback has been received from a variety of sources including our MyHealthCare website, consumer focus groups and newspaper articles. Below are some examples:

- “We have needed these reports for a long time”
- “Now we are more empowered and have tools to compare.”

- “This will help us to ask questions when we see our doctor.”
- “The consumer reports help people make better choices about their health care. People can use them as a basis for questions to ask their doctors.”
- “They [the reports] are not definitive—the end all in choosing one physician or hospital over another—but rather a valuable point of departure for people anticipating specific health care encounters.”
- “The more a person knows about the cost and quality of care, the more likely they are to receive the care they need and deserve.”

## **What is Telestroke in Utah?**

Telestroke is a system where patients with stroke symptoms living in rural areas can be evaluated by a University of Utah Health Sciences Center stroke neurologist. Stroke patients throughout Utah are given the opportunity to be prescribed clot busting medication (an effective treatment for stroke), which rural areas are usually unable to administer.

The Stroke Center at University of Utah Hospital employs a 24/7 stroke response team, including neurologists trained in stroke treatment and other specialists. For more information about telestroke and which hospitals have telestroke capability, call the Heart Disease and Stroke Prevention Program at 1-866-88-STROKE.

{Text endorsed by the Heart Disease and Stroke Prevention Program, Utah Department of Health}

## **What is a certified stroke center?**

A certified stroke facility (hospital) provides stroke-related care and services that meet the unique, specialized needs of stroke patients. For example, certified stroke centers are required to have health care experts (i.e. doctors, nurses) on hand who provide 24-hour rapid response for stroke care.

As of September 2008, there were three primary stroke centers in Utah: Intermountain Medical Center/LDS Hospital, McKay-Dee Medical Center, University Health Care, and Utah Valley Regional Medical Center. Primary stroke facilities are reviewed every two years by the Joint Commission (JCAHO). For an updated list of certified facilities in Utah, [see the JCAHO website](#).

{Text endorsed by the Heart Disease and Stroke Prevention Program, Utah Department of Health}

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## **About the Data**

### **Where do the data come from?**

Most of the data in this report come from health care hospital claim records. Utah hospitals are required by law to submit a standard set of information about each inpatient who spends at least 24 hours in the hospital to the Office of Health Care Statistics, Utah Department of Health, for the Utah Hospital Discharge Database. The Agency for Healthcare Research and Quality (AHRQ), a federal agency in charge of quality of care, provided national information. For further information visit the AHRQ website <<http://www.ahrq.gov>>

### **Have the data been verified by others?**

Yes. Utah hospitals review the data for accuracy during a review period of at least 30 days while the report is being developed. They also review the completed report before it is released. Hospitals may submit comments to be posted online as part of the report.

### **Why use these indicators/measures?**

SB 132 mandates that the comparison reports use nationally recognized quality standards. A federal agency charged with overseeing health care quality, the Agency for Healthcare Research and Quality (AHRQ), developed the Inpatient Quality Indicators (IQIs). The IQIs allow comparison among Utah hospitals with similar patients nationwide. This report shows one IQI for inpatient with stroke. For more information on the AHRQ IQIs, see <[http://www.qualityindicators.ahrq.gov/iqi\\_overview.htm](http://www.qualityindicators.ahrq.gov/iqi_overview.htm)>.

The measure for average charge is an All Patient Refined Diagnosis Related Group (APR-DRG) for similar, though not identical, conditions and procedures among inpatients. For this reason, the number of patients for the APR-DRG and the IQI is not the same.

### **What are the limitations of quality comparisons in the report?**

Many factors affect a hospital's performance on utilization measures. Such factors include the hospital's size, the number of stroke patients treated, available specialists, teaching status and especially the medical history of the hospital's patients and how ill those patients are. Hospitals that treat high-risk (very ill) patients may have higher percentages of deaths than hospitals that transfer these patients. Hospitals also may report patient diagnosis codes differently, which could impact the comparison among hospitals. Quality indicators adjust for how ill each hospital's patients are, but the adjustment may not capture the full complexity of the patient's condition. The Utah Hospital Discharge Database includes up to nine diagnoses and up to six procedures for each patient. Some patients have additional diagnoses and procedures that are not included in this database. As a result, the measures of inpatient illness may not be complete.

## What are the limitations of the charge comparisons in the report?

The average charge shown in this report differs from “costs,” “reimbursement,” “price” and “payment.” Different payers have different arrangements with each hospital for payment. Many factors will affect the cost of your hospital stay, including whether you have health insurance, the type of insurance and the billing procedures at the hospital. This report excludes outlier (unusually high) charge cases and length of stay cases from the calculation of average charge for inpatients. It does not exclude outlier charge for outpatients (see [Glossary](#)). While APR-DRGs do consider levels for each inpatient’s severity of illness, these levels may not completely reflect the complexity of the inpatient’s condition.

## Hospitals in Utah

County Name	Hospital Name	Location City, State, Zip	Phone Number
Beaver	Beaver Valley Hospital	Beaver, UT 84713	(435) 438-7100
Beaver	Milford Valley Memorial Hospital	Milford, UT 84751	(435) 387-2411
Box Elder	Bear River Valley Hospital	Tremonton, UT 84337	(435) 257-7441
Box Elder	Brigham City Community Hospital	Brigham City, UT 84302	(435) 734-9471
Cache	Cache Valley Specialty Hospital	North Logan, UT 84341	(435) 713-9700
Cache	Logan Regional Hospital	Logan, UT 84341	(435) 716-1000
Carbon	Castlevew Hospital	Price, UT 84501	(435) 637-4800
Davis	Davis Hospital & Medical Center	Layton, UT 84041	(801) 807-1000
Davis	Lakeview Hospital	Bountiful, UT 84010	(801) 299-2200
Duchesne	Uintah Basin Medical Center	Roosevelt, UT 84066	(435) 722-4691
Garfield	Garfield Memorial Hospital	Panguitch, UT 84759	(435) 676-8811
Grand	Allen Memorial Hospital	Moab, UT 84532	(435) 259-7191
Iron	Valley View Medical Center	Cedar City, UT 84720	(435) 868-5000
Juab	Central Valley Medical Center	Nephi, UT 84648	(435) 623-3000
Kane	Kane County Hospital	Kanab, UT 84741	(435) 644-5811
Millard	Delta Community Medical Center	Delta, UT 84624	(435) 864-5591



## Hospitals in Utah (continued)

County Name	Hospital Name	Location City, State, Zip	Phone Number
Millard	Fillmore Community Medical Center	Fillmore, UT 84631	(435) 743-5591
Salt Lake	Alta View Hospital	Sandy, UT 84094	(801) 501-2600
Salt Lake	Intermountain Medical Center	Murray, UT 84157	(801)-507-7000
Salt Lake	Jordan Valley Medical Center	West Jordan, UT 84088	(801) 561-8888
Salt Lake	LDS Hospital	Salt Lake City, UT 84143	(801) 408-1100
Salt Lake	The Orthopedic Specialty Hospital	Salt Lake City, UT 84107	(801) 314-4100
Salt Lake	Pioneer Valley Hospital	West Valley City, UT 84120	(801) 964-3100
Salt Lake	Primary Children's Medical Center	Salt Lake City, UT 84113	(801) 662-1000
Salt Lake	Salt Lake Regional Medical Center	Salt Lake City, UT 84102	(801) 350-4111
Salt Lake	St. Mark's Hospital	Salt Lake City, UT 84124	(801) 268-7111
Salt Lake	University Health Care/University Hospital	Salt Lake City, UT 84132	(801) 581-2121
Salt Lake	Veteran's Administration Medical Center	Salt Lake City, UT 84148	(801) 582-1565
San Juan	San Juan Hospital	Monticello, UT 84535	(435) 587-2116
Sanpete	Gunnison Valley Hospital	Gunnison, UT 84634	(435) 528-7246
Sanpete	Sanpete Valley Hospital	Mount Pleasant, UT 84647	(435) 462-2441
Sevier	Sevier Valley Medical Center	Richfield, UT 84701	(435) 893-4100
Tooele	Mountain West Medical Center	Tooele, UT 84074	(435) 843-3600
Uintah	Ashley Regional Medical Center	Vernal, UT 84078	(435) 789-3342
Utah	American Fork Hospital	American Fork, UT 84003	(801) 855-3300
Utah	Mountain View Hospital	Payson, UT 84651	(801) 465-7000
Utah	Orem Community Hospital	Orem, UT 84057	(801) 224-4080
Utah	Timpanogos Regional Hospital	Orem, UT 84057	(801) 714-6000

## Hospitals in Utah (continued)

County Name	Hospital Name	Location City, State, Zip	Phone Number
Utah	Utah Valley Regional Medical Center	Provo, UT 84603	(801) 357-7850
Wasatch	Heber Valley Medical Center	Heber City, UT 84032	(435) 654-2500
Washington	Dixie Regional Medical Center	St. George, UT 84790	(435) 251-1000
Weber	McKay-Dee Hospital	Ogden, UT 84403	(801) 387-2800
Weber	Ogden Regional Medical Center	Ogden, UT 84405	(801) 479-2111

## **Become an Informed Health Care Consumer**

Choosing a hospital that is right for you or a family member might be one of the most important decisions you'll ever make. You can improve your care and the care of your loved ones by taking an active role in your treatment. Remember to ask questions and always consider yourself a partner in your care and treatment.

The following websites contain materials that will help patients choose wisely when making medical decisions:

### **Questions are the Answer: Get More Involved in Your Health Care**

**<http://www.ahrq.gov/questionsaretheanswer/index.html>**

### **Guide to Health Quality: How to Know It When You See It**

**<http://www.ahrq.gov/consumer/guidetoq/>**

### **Be an Active Health Care Consumer**

**<http://www.ahrq.gov/path/beactive.htm>**

### **Navigating the Health Care System**

**<http://www.ahrq.gov/consumer/cc.htm>**

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## **Why use these indicators/measures?**

### **AHRQ Inpatient Quality Indicators**

The Agency for Healthcare Research and Quality (AHRQ), a federal agency charged with overseeing quality of care, developed the Inpatient Quality Indicators (IQIs). The IQIs allow comparison among Utah inpatients and similar inpatients nationwide based on the State Inpatient Databases 2005, the most recently available database, through the expected rate. These databases represent about 90% of all inpatients in the U.S. from participating states in 2005. The Healthcare Cost and Utilization Project (HCUP) collects these data every year.

The AHRQ IQIs are nationally recognized indicators and are used in this report in compliance with the mandates of Senate Bill 132, the Health Care Consumer's Report Bill, which was passed in 2005.

### **APR-DRGs**

Measures for average hospital charge are All Patient Refined Diagnosis Related Groups (APR-DRGs) for similar, though not identical, kinds of stroke procedures in this report's quality of care section. APR-DRG software, widely used in health care research, organizes about 20,000 clinical diagnoses and procedures into about 300 groups. Read this report's Technical Document to learn more. For a hard copy, click the Technical Document link and print.

Each APR-DRG has four levels for severity of illness. This report shows average hospital charge for minor and moderate severity of illness levels combined and average hospital charge for major and extreme severity of illness levels combined. APR-DRGs and severity of illness levels apply to inpatients but not to outpatients. This report uses APR-DRG version 20.0, because the Agency for Healthcare Research and Quality (AHRQ) uses it for expected rate in the Inpatient Quality Indicators (IQIs).

Please note that other Utah Department of Health reports that include average charge information use APR-DRG Version 15.0 for data from 2004 and earlier.

Also be aware that the number of patients in the IQI may not be the same as the number of patients for similar APR-DRGs. First, the APR-DRGs are hierarchical, mutually exclusive groups of conditions and procedures. A patient's APR-DRG reflects that patient's most resource-intensive condition and/or procedure. Second, each IQI has patient exclusion and inclusion criteria that may not be the same as those for a similar APR-DRG. For more information, see this report's Technical Document.

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## **General Terms Used in This Report**

**Actual death percentage:** the actual number of deaths per 100 patients with a certain condition or procedure. Actual death percentage does not adjust for the hospital's case mix. Other name: observed death rate per 100 patients. Some measures exclude transfer patients.

**Actual Rate:** The actual rate is the number of events that occurred for every 100 patients for some indicators and for every 1,000 patients for other indicators. Some measures exclude transfer patients. This rate is not risk-adjusted.

**Agency for Healthcare Research and Quality (AHRQ):** a federal agency that develops indicators of patient safety and quality of care and engages in other related activities.

**Allergic reaction:** swollen glands, trouble breathing and other body reactions that can be life threatening.

**APR-DRG:** stands for All Patient Refined Diagnosis Related Group, software widely used in health services research. The APR-DRG software organizes about 20,000 clinical diagnoses and procedures into about 300 groups. Each APR-DRG has four levels for severity of illness. This report combines the Minor and Moderate levels and combines the Major and Extreme levels for the average hospital charge tables. This report uses APR-DRG version 20.0. Read more at [http://solutions.3m.com/wps/portal/3M/en\\_US/3MHIS/HealthInformationSystems/products-services/product-list/apr-drg-classification](http://solutions.3m.com/wps/portal/3M/en_US/3MHIS/HealthInformationSystems/products-services/product-list/apr-drg-classification).

**Average charge:** the average dollars for hospital services for which patients were billed at a particular hospital. The charge does not include physicians' professional fees or patient personal costs. The charge may differ from actual payment that the hospital receives. For this report high outlier charges were excluded from each hospital's average charge. A high outlier (unusually high) charge is over 2.5 standard deviations higher than the state mean for each of four subclasses of severity of illness per APR-DRG.

**Expected death percentage:** the number of deaths expected per 100 patients with a certain condition or procedure based on similar patients nationwide in the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases for 2005. Expected death percentage adjusts for the hospital's case mix (patients' age, gender and how ill the patients are). Some measures exclude transfer patients. Read more at [www.qualityindicators.ahrq.gov/downloads/iqi/iqi\\_guide\\_v31.pdf](http://www.qualityindicators.ahrq.gov/downloads/iqi/iqi_guide_v31.pdf).

**Expected Rate:** the number of patients expected for every 100 patients for some indicators and for every 1,000 patients for other indicators with a certain condition or procedure based on similar patients nationwide in the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases for 2005. Expected rate adjusts for the hospital's case mix (patients' age, gender and how ill the patients are). Some measures exclude transfer patients. Read more at [www.qualityindicators.ahrq.gov/downloads/iqi/iqi\\_guide\\_v31.pdf](http://www.qualityindicators.ahrq.gov/downloads/iqi/iqi_guide_v31.pdf).

**Facility or facilities:** hospitals that treat outpatients and inpatients and hospitals and ambulatory surgery centers that treat outpatients.

**Inpatient:** spends at least 24 hours in the hospital.

**Inpatient Quality Indicators (IQI):** were developed by the Agency for Healthcare Research and Quality (AHRQ), a federal agency, to be used on inpatient hospital discharge data. AHRQ IQI definitions and methods were used to calculate the actual and expected deaths rates conditions and procedures in this report. AHRQ IQI limitations include possible differences in hospital coding practices and possible inadequacy of the risk adjustment method for expected death percentage. In some reports AHRQ IQIs and APR-DRGs in Utah Hospital Comparison reports are similar but not identical, so the number of patients may not be the same. See the report specific Technical Document. Read more at [www.qualityindicators.ahrq.gov/downloads/iqi/iqi\\_guide\\_v31.pdf](http://www.qualityindicators.ahrq.gov/downloads/iqi/iqi_guide_v31.pdf).

**Outlier charge:** a charge by a specified hospital that is more than 2.5 standard deviations higher than the state average by APR-DRG and severity of illness level. This report excludes outlier charge cases. For more information see the report specific Technical Document.

**Outpatient:** usually spends less than 24 hours in the facility (hospital or freestanding ambulatory surgery center). Many outpatients have surgery and leave the facility the same day. Others have surgery and leave the next day. A few others may stay longer for observation. Some hospitals consider these patients to be outpatients.

**Patient Safety Indicators (PSIs):** Patient safety is quality improvement of health care to reduce medical injuries (e.g., injuries to patients in a health care setting such as a hospital). The Agency for Healthcare Research and Quality (AHRQ), a federal agency, has developed a set of indicators of patient safety based on the inpatient hospital discharge data. Although hospital discharge data do have some limitations, research shows that PSIs may serve as proxies for patient safety-related performance. Read more at [www.qualityindicators.ahrq.gov/](http://www.qualityindicators.ahrq.gov/).

**Severity of illness:** Utah Hospital Comparison reports use two levels of illness based on the APR-DRG's four subclasses for severity of illness (SOI): Minor/Moderate and Major/Severe. For more information see the report specific Technical Document.

**Star rating system:** Utah Hospital Comparison reports use star rating based on a test of statistical significance, the exact 95% confidence interval. For the Heart Surgeries and Conditions Report and the Hip and Knee Surgeries and Conditions Report, this test shows whether the difference between a hospital's actual death percentage and expected death percentage is real (statistically significant,  $p < 0.05$ ) or just due to chance. We calculated the upper and lower exact 95% confidence interval limits for each hospital's actual death rate for each indicator. If the expected death percentage is between the lower and higher limits for the actual death percentage, then we are 95% confident that the actual death rate and the expected death rate are essentially the same. If the higher limit for the actual death percentage is lower than the expected death percentage, then we are 95% confident that the actual death percentage is really lower than the expected death rate. If the lower limit for the actual death percentage is higher than the expected death percentage, then we are 95% confident that the actual

death rate is really higher than the expected death rate. For more information see the report specific Technical Document.

**State Inpatient Databases (SID):** a national sample that represents about 90% of all inpatients from 37 participating states in 2005. The Healthcare Cost and Utilization Project (HCUP) collects these data every year. For this report, the percentage of expected deaths for the quality indicators is adjusted using the SID 2005. Read more at [www.hcup.ahrq.gov](http://www.hcup.ahrq.gov).

**Statistically significant difference:** the star ratings in the AHRQ IQI tables use exact 95% confidence intervals to show whether differences are statistically significant ( $p < 0.05$ ). For more information see the report specific Technical Document.

**Utah overall:** for each specified condition or procedure and (if applicable) severity of illness group (Minor/Moderate or Major/Extreme), all adult cases treated at all Utah hospitals, except some specialty hospitals such as Primary Children's Medical Center. Utah overall average charge is the sum of all reported hospital charges billed to all patients treated at Utah hospitals divided by the number of Utah overall cases except the Veterans Administration. The AHRQ IQI tables include only Utah residents. The APR-DRGs tables include Utah resident and non-resident patients.

## **Stroke Terms Used in This Report**

**Cerebral:** of or related to the brain or cerebrum.

**Clot:** lump of coagulated blood.

**Cranial:** of or related to the skull or cranium.

**Hemorrhage:** bleeding.

**Infarct:** an area of necrotic (dead) tissue caused by insufficient blood supply (not enough blood).

**Infarction:** the process of forming an infarct.

**Intracranial:** within the skull.

**Ischemic stroke:** stroke caused by blockage of a blood vessel carrying blood to the brain. A blood clot that stays in place in the brain is called a cerebral thrombus. A clot that forms some place other than the brain, breaks loose and moves through the bloodstream to the brain is called a cerebral embolism.

**Occlusion:** blockage.

**Precerebral:** before the brain, in front of the brain.

**Stroke (brain attack, cerebral vascular disease, cerebrovascular disease, CVA, cerebral hemorrhage, ischemic stroke):** an interruption of the blood supply to any part of the brain. A stroke can happen when a blood vessel carrying blood to the brain is blocked by a blood clot. A stroke can also happen when a blood vessel in the brain breaks. Interruption of the brain's blood supply can cause a sudden lessening or loss of consciousness, feeling or voluntary movement. Interruption of the brain's blood supply, even for a short time, can result in brain damage, permanent disabilities and death. Read more at <http://www.nlm.nih.gov/medlineplus/ency/article/000726.htm#Definition>.

Medical terms for stroke are based on the National Stroke Association, <http://www.stroke.org>.

Indicator terms, such as expected rate, are based on Agency for Healthcare Research and Quality Technical Documents.

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## **Stroke Resources for Consumers**

If you would like to learn more about stroke, below is a list of reputable state and national websites that you may find helpful. Call the Utah Department of Health Stroke Hotline at 1-866-88-STROKE for more information.

**American Heart Association** <<http://www.americanheart.org/presenter.jhtml?identifier=3053>> – contains a brief summary of stroke warning signs and what to do if you or someone near you has a stroke.

**Heart Disease and Stroke Prevention Program** <<http://www.hearhighway.org/stroke.html>>– offers important stroke information such as risk factors, treatment and rehabilitation. The image to the right has been used in a prior stroke awareness campaign (“Think of Stroke as a Time Bomb”) for Utahns. Sponsored by the Utah Department of Health.

**MedlinePlus** <<http://www.nlm.nih.gov/medlineplus/stroke.html>>– promotes numerous links to trusted resources about stroke including government agencies and health-related organizations. Sponsored by the Library of Medicine.

**National Institute of Neurological Disorders and Stroke** <<http://www.ninds.nih.gov/disorders/stroke/knowstroke.htm>>– features a wealth of consumer-friendly stroke material supporting one theme: know stroke, know the signs, act in time.

**National Stroke Association** <<http://www.stroke.org/site/PageNavigator/HOME>>- focuses 100% of its efforts on stroke. The website presents detailed information for patients, caregivers, health care providers and the general public about stroke prevention and stroke recovery.

# Stroke Deaths in Utah Hospitals (IQI 17)

Adults 18 Years and Over: 2004-2006

Hospital	Total Stroke Patients	Actual Deaths	Expected Deaths	Statistical Rating
<b>Utah Overall</b>	<b>6,228</b>	<b>10.81%</b>	<b>11.34%</b>	<b>* *</b>
Alta View Hospital	127	6.3%	8.5%	* *
American Fork Hospital	120	9.2%	6.4%	* *
Brigham City Community Hospital	39	7.7%	7.6%	* *
Castleview Hospital	56	7.1%	7.8%	* *
Cottonwood Hospital	263	5.3%	7.0%	* *
Davis Hospital and Medical Center	169	13.0%	9.6%	* *
Dixie Regional Medical Center	440	6.4%	7.1%	* *
Jordan Valley Medical Center	52	19.2%	12.4%	* *
Lakeview Hospital	116	7.8%	9.8%	* *
LDS Hospital	760	14.3%	16.7%	* *
Logan Regional Hospital	126	8.7%	9.3%	* *
McKay-Dee Hospital	641	11.2%	11.1%	* *
Mountain View Hospital	79	8.9%	7.7%	* *
Ogden Regional Medical Center	172	8.7%	11.3%	* *
Pioneer Valley Hospital	52	11.5%	9.3%	* *
Salt Lake Regional Medical Center	68	8.8%	9.2%	* *
Sevier Valley Medical Center	36	11.1%	6.5%	* *
St. Mark's Hospital	371	5.9%	9.2%	* * *

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**Most Utah hospitals in this table had about as many deaths as expected compared to similar hospitals in the U.S. One Utah hospital had fewer than expected. No hospital had more than expected.**

[See additional hospitals that treated at least one patient but less than 30 patients.](#)

[Learn about Primary Stroke Centers and Telestroke Facilities.](#)

[View Data Limitations.](#)

**Rating:** based on the Exact 95% Confidence Interval test of statistical significance, except hospitals with no deaths from 2004 through 2006 have three stars.

* * * Fewer deaths than expected (better)	* * Same as expected	* More deaths than expected
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**Actual deaths:** percentage of patients who received care for this condition or procedure and died in this hospital.

**Expected deaths:** percentage of patients who were expected to die at this hospital if it performed the same as other U.S. hospitals that treated similar patients (age, gender, how ill the patients were).



# Stroke Deaths in Utah Hospitals (IQI 17)

Adults 18 Years and Over: 2004-2006

- CONTINUED -

Hospital	Total Stroke Patients	Actual Deaths	Expected Deaths	Statistical Rating
Utah Overall	6,228	10.81%	11.34%	* *
Timpanogos Regional Hospital	75	14.7%	10.7%	* *
University Health Care	1476	13.1%	13.1%	* *
Utah Valley Regional Medical Center	559	11.4%	13.8%	* *
Valley View Hospital	79	7.6%	8.7%	* *
Veterans Administration Medical Center	147	6.1%	8.6%	* *

**Most Utah hospitals in this table had about as many deaths as expected compared to similar hospitals in the U.S. One Utah hospital had fewer than expected. No hospital had more than expected.**

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**Actual deaths:** percentage of patients who received care for this condition or procedure and died in this hospital.

**Expected deaths:** percentage of patients who were expected to die at this hospital if it performed the same as other U.S. hospitals that treated similar patients (age, gender, how ill the patients were).

**These Hospitals Treated Between 1 and 29  
Stroke Patients From 2004-2006**

Allen Memorial Hospital  
Ashley Regional Medical Center  
Bear River Valley Hospital  
Beaver Valley Hospital  
Cache Valley Specialty Hospital  
Central Valley Hospital  
Delta Community Medical Center  
Fillmore Community Medical Center  
Garfield Memorial Hospital  
Gunnison Valley Hospital  
Heber Valley Medical Center  
Kane County Hospital  
Mountain West Medical Center  
San Juan Hospital  
Sanpete Valley Hospital  
Uintah Basin Medical Center

## Stroke Among Adults

(APR-DRG 045, CVA and Precerebral Occlusion With Infarction, Age 18 Years and Over)

### Average Hospital Charges, 2006

	Level of Illness			
	Minor/Moderate		Major/Extreme	
Hospital	Patients	Average Charge	Patients	<u>Average Charge</u>
<b>Utah Overall</b>	<b>1,108</b>	<b>\$12,127</b>	<b>534</b>	<b>\$19,335</b>
Allen Memorial Hospital	6	\$9,699	<5	\$4,444
Alta View Hospital	33	\$9,386	15	\$13,098
American Fork Hospital	27	\$8,434	8	\$9,584
Ashley Valley Medical Center	9	\$7,867	6	\$12,386
Bear River Valley Hospital	<5	\$6,606	<5	\$10,467
Beaver Valley Hospital	<5	\$5,814	0	\$0
Brigham City Community Hospital	9	\$7,275	6	\$7,053
Cache Valley Specialty Hospital	<5	\$3,698	<5	\$2,386
Castleview Hospital	13	\$9,050	8	\$13,584
Central Valley Medical Center	7	\$10,575	<5	\$9,298
Cottonwood Hospital	51	\$11,085	25	\$15,842
Davis Hospital & Medical Center	45	\$13,722	18	\$21,050
Delta Community Medical Center	<5	\$5,895	<5	\$7,631
Dixie Regional Medical Center	105	\$10,842	34	\$18,377
Fillmore Community Medical Center	<5	\$3,832	0	\$0
Garfield Memorial Hospital	<5	\$3,660	<5	\$5,867
Gunnison Valley Hospital	12	\$5,015	5	\$6,023
Heber Valley Medical Center	5	\$7,807	<5	\$4,706

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#### Table Legend

< 5 = 1 to 4 patients

#### State average hospital length of stay

Minor/Moderate is 2.9 days

Major/Extreme is 4.6 days.

[Learn about Primary Stroke Centers and Telestroke Facilities.](#)

[View Data Limitations.](#)

**Level of Illness:** Compared to patients with minor/moderate level of illness, patients with major/extreme level of illness are likely to have more serious conditions that require more complex treatment.

**Average Charge:** The average dollars for hospital services for which patients were billed at a particular hospital. The charge does not include physicians' professional fees or patient personal costs.

## Stroke Among Adults

(APR-DRG 045, CVA and Precerebral Occlusion With Infarction, Age 18 Years and Over)

### Average Hospital Charges, 2006

- CONTINUED -

	Level of Illness			
	Minor/Moderate		Major/Extreme	
Hospital	Patients	Average Charge	Patients	<u>Average Charge</u>
<b>Utah Overall</b>	<b>1,108</b>	<b>\$12,127</b>	<b>534</b>	<b>\$19,335</b>
Jordan Valley Medical Center	21	\$13,738	9	\$13,901
Lakeview Hospital	26	\$10,881	9	\$15,743
LDS Hospital	83	\$14,323	71	\$24,939
Logan Regional Hospital	24	\$7,435	12	\$12,049
McKay-Dee Hospital Center	124	\$12,679	61	\$20,244
Mountain View Hospital	15	\$11,348	13	\$22,037
Mountain West Medical Center	<5	\$18,244	<5	\$15,267
Ogden Regional Medical Center	31	\$13,520	14	\$20,674
Pioneer Valley Hospital	8	\$10,705	5	\$21,111
Salt Lake Regional Medical Center	20	\$16,550	6	\$20,528
Sanpete Valley Hospital	8	\$7,642	<5	\$2,625
Sevier Valley Medical Center	11	\$5,053	5	\$12,197
St. Mark's Hospital	81	\$13,720	29	\$19,758
Timpanogos Regional Hospital	16	\$13,813	8	\$15,224
Uintah Basin Medical Center	9	\$6,927	<5	\$7,864
University Health Care	174	\$14,589	86	\$26,051
Utah Valley Regional Medical Center	78	\$12,786	47	\$15,730
Valley View Medical Center	20	\$6,725	8	\$15,125
Veterans Administration Medical Center	22	\$0	11	\$0

#### Table Legend

< 5 = 1 to 4 patients

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